

Further Psychometric Support for the 10-Item Version of the Perceived Stress Scale

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Because of increased stress conditions in college students, updated psychometrics of the Perceived Stress Scale, 10-item version (PSS-10; S. Cohen & G. Williamson, 1988) are necessary. Participants were 281 undergraduates at 3 public universities. An exploratory factor analysis revealed a 2-factor structure measuring Perceived Helplessness and Perceived Self-Efficacy. Normative results, internal consistencies, and construct validity were supported. The current findings reveal that the PSS-10 is a reliable and valid instrument for assessment of perceived stress in college students.

College can be a highly stressful life transition with increased exposure to stressors and subsequent behavioral reactions. Increasing stress reactions among college students has become a widely recognized issue on college campuses (Misra & Castillo, 2004; Sax, 1997). Stressors permeate several facets of college life, including academics, socialization, family relations, independence/autonomy, intimate relationships, and re-

A paucity of multiple-item instruments for assessing general stress limits the ability of clinicians and researchers to accurately measure perceived stress. Some objective measures use life-event scales to create a cumulative stress score, and “these scores are usually based on either the number of events that have occurred within the specified temporal framework or on a sum of event weights that are based on the judges’ rating of the difficulty of adjusting to these events” (Cohen, Kamarck, & Mermelstein, 1983, p. 386). These measures do not take into consideration the personal and contextual factors that influence the various degrees to which a person may view a stressful situation as stressful.

To address this concern, Cohen et al. (1983) developed the Perceived Stress Scale (PSS), which was based on Lazarus’s theory of stress appraisal (Lazarus, 1966; Lazarus & Folkman, 1994). The PSS is a 14-item self-report instrument designed to measure “the degree to which situations in one’s life are appraised as stressful” (Cohen et al., 1983). Initial psychometric data were collected in three samples (two college samples and one community sample).

with higher composite scores indicative of greater perceived stress. The PSS-10 possesses adequate internal reliability (Cohen & Williamson, 1988). Interested readers may view the PSS-10 items at <http://www.mindgarden.com/docs/PerceivedStressScale.pdf>.

Sensation Seeking Scale, Form V (SSS-V; Zuckerman, Eysenck, & Eysenck, 1978). The SSS-V is a 40-item, forced choice inventory developed to measure individual differences in stimulation and arousal needs (Roberti, Storch, & Bravata, 2003; Zuckerman, 1994). The SSS-V includes four 10-item subscales: Thrill and Adventure Seeking, Experience Seeking, Disinhibition, and Boredom Susceptibility. The Thrill and Adventure Seeking subscale measures desires to engage in sports or activities involving some physical danger or risk. The Experience Seeking subscale contains items describing the desire to seek new experiences through travel and through the mind and senses by living in a nonconforming lifestyle with unconventional friends. The Disinhibition subscale measures the need to disinhibit behavior in the social sphere by drinking, partying, and seeking variety in sexual partners. Last, the Boredom Susceptibility subscale measures an aversion for repetitive experiences of any kind, routine work, or even dull or predictable people. Construct validity and divergent validity for this instrument are well established (Zuckerman, 1994). In the current study, Cronbach's alphas for each subscale in this sample were as follows: Total Score (.83), Thrill and Adventure Seeking (.78), Experience Seeking (.74), Disinhibition (.71), and Boredom Susceptibility (.62).

State-Trait Anxiety Inventory–Trait version (STAI-T). The STAI-T (Spielberger, 1983) is a 20-item scale, rated on a 4-point Likert scale, that measures the tendency of people to experience general anxiety and view stressful situations as threatening. Factor analytic results reveal that the STAI-T has two distinct factors assessing anxiety (STAI-A

STAI-A] 3) - 20 .5 (.
MLC, Form A; Wilson, 1987)

factor model.

TABLE 2
Pearson Product-Moment Correlations Between the Perceived Stress Scale, 10-Item Version (PSS-10), and
Various Psychological Measures

Item	1	2	3	4	5	6	7	8	9	10	11	12	13
1. PSS-10 Total Score	—	.83**	.97**	.73**	.59**	.72**	-.16	.20*	.18*	-.04	.02	.03	.18*
2. PSS-10: Perceived Helplessness Factor		—	.65**	.62**	.47**	.64**	-.16	.19*	.10	-.10	.07	.07	.05
3. PSS-10: Perceived Self-Efficacy Factor			—	.70**	.59**	.68**	-.14	.18*	.20*	-.01	-.01	.01	.23**
4. STAI-T Total Score				—	.87**	.96**	-.23**	.28**	.25**	.01	-.09	.22**	.29**
5. STAI-T: Anxiety Factor					—	.68**	-.15	.21**	.17	.01	-.02	.31**	.37**
6. STAI-T: Depression Factor						—	-.25**	.29**	.26**	.02	-.12	.14	.21**
7. MHLC: Internal Belief Subscale							—	-.39**	-.15	.12	.10	-.24**	-.11
8. MHLC: Chance Subscale								—	.39**	-.02	-.12	.21**	.15
9. MHLC: Powerful Others Subscale									—	-.21**	-.12	.09	.03
10. SSS-V										—	-.33**	.10	.20*
11. SCSRFQ-SF											—	-.01	-.03
12. OA												—	.48**
13. RA													—

Note. STAI-T = State-Trait Anxiety Inventory-Trait version; MHLC = Multidimensional Health Locus of Control, Form A; SSS-V = Sensation Seeking Scale, Form V; SCSRFQ-SF = Santa Clara Strength of Religious Faith Questionnaire-Short Form; OA = Adult Overt Aggression Scale from the Adult Aggression Scale; RA = Relational Aggression Scale from the Adult Aggression Scale.

* $p < .001$, two-tailed. ** $p < .0001$, two-tailed.

on the MHLC Chance subscale and the MHLC Powerful Others subscale. To assess divergent validity, Pearson product-moment correlations were calculated between the PSS-10 and the following measures: the SSS-V, the SCSRFQ-SF, the OA subscale, and the RA subscale (see Table 2). No significant correlations exist between the PSS-10 and the SSS-V, the SCSRFQ-SF, and the OA subscale. A small positive correlation exists between the PSS-10 and the RA subscale. Last, no meaningful differences existed between men and women when convergent and divergent validity were evaluated separately by gender.

Discussion

The purpose of this study was to extend further the psychometric properties by providing factorial analytic results, construct validation, and normative data in college students for the PSS-10. Our findings indicate that the PSS-10 is a reliable and valid self-report measure of perceived stress within a nonclinical, multisite sample of U.S. college students. To our knowledge, this is the first study providing factor analytic findings for the PSS-10 in a nonclinical sample. The current findings support a two-factor model and are consistent with prior findings using the PSS-14 (Hewitt et al., 1992; Martin et al., 1995). Because the PSS-14 included items not present in the PSS-10 factor structure, we updated the factor labels, Perceived Helplessness and Perceived Self-Efficacy, to reflect these changes. Internal consistency and interscale correlations between the two factors were excellent. Item-total correlations were strong, indicating direct contributions of individual items toward the total score on the PSS-10. Furthermore, this study provides updated PSS-10 normative findings (means and standard deviations) with college students.

Convergent validity was supported, with notable associations among the PSS-10 Total Score and the STAI Total Score, the STAI-A factor, and the STAI-D factor, and small to moderate correlations with the MHLC Chance and Powerful Others subscales. Because each measure is based on self-reports, correlations may be inflated because of shared method variance (Campbell & Stanley, 1963). Associations between the two subscales from the MHLC revealed less robust correlations, which can be explained by differences in item content. The MHLC items focus on locus of control relative to healthcare decisions, whereas the PSS-10 focuses on items broadly identifying perceived self-regulation regarding stress. Although conceptually similar, they are distinct concepts. Divergent validity was supported by weak correlations with indices measuring conceptually distinct constructs. It is interesting that a small correlation does exist between the PSS-10 Total Score and the RA subscale score. Keeping in mind the nature of relational aggression, this finding is not surprising. The small association may reflect greater perceived

- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on Applied Social Psychology* (pp. 31–67). Newbury Park, CA: Sage.
- Cronbach, L. (1951). Coefficient alpha and the internal consistency of tests. *Psychometrika*, 16, 297–334.
- Dill, P., & Henley, T. (1998). Stressors of college: A comparison of traditional and nontraditional students. *The Journal of Psychology*, 132, 25–32.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272–299.
- Hewitt, P. L., Flett, G. L., & Mosher, S. W. (1992). The Perceived Stress Scale: Factor structure and relation to depression symptoms in a psychiatric sample. *Journal of Psychopathology and Behavioral Assessment*, 24, 247–257.
- Hudd, S., Dumlaio, J., Erdmann-Sager, D., Murray, D., Phan, E., Soukas, N., et al. (2000). Stress at college: Effects on health habits, health status, and self-esteem. *College Student Journal*, 34, 217–228.
- Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, 23, 187–200.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S., & Folkman, S. (1994). *Stress, appraising, and coping*. New York: Springer.
- Lee, R. M., Keough, K. A., & Sexton, J. D. (2002). Social connectedness, social appraisal, and perceived stress in college women and men. *Journal of Counseling & Development*, 80, 355–361.
- Martin, R. A., Kazarian, S. S., & Breiter, H. J. (1995). Perceived stress, life events, dysfunctional attitudes, and depression in adolescent psychiatric inpatients. *Journal of Psychopathology and Behavioral Assessment*, 8, 87–95.
- Misra, R., & Castillo, L. G. (2004). Academic stress among college students: Comparison of American and international students. *International Journal of Stress Management*, 11, 132–148.
- Morales, J. R., Ruh, J., & Werner, N. (2002). Adult aggression/victimization measure. Unpublished manuscript.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Plante, T. G., Vallaeyes, C. L., Sherman, A. C., & Wallston, K. A. (2002). The development of

- Storch, E. A., Roberti, J. W., Bravata, E., & Storch, J. B. (2004). Psychometric investigation of the Santa Clara Strength of Religious Faith Questionnaire—Short-Form. *Pastoral Psychology, 52*, 479–483.
- Stowell, J. R., Kiecolt-Glaser, J. K., & Glaser, R. (2001). Perceived stress and cellular immunity: When coping counts. *Journal of Behavioral Medicine, 24*, 23–339.
- Streiner, D. L., & Norman G. R. (1989). *Health measurement scales: A practical guide to their development and use*. Oxford, England: Oxford University Press.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn & Bacon.
- Wallston, K. A., Wallston, B. S., & Devellis, R. F. (1978). Development of the Multidimensional Health Locus of Control scale (MHLC). *Health Education Monographs, 6*, 160–170.
- Wallston, K. A., Wallston, B. S., Smith, S., & Dobbins, C. (1987). Perceived control and health. *Current Psychological Research and Reviews, 5*, 625.
- Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge University Press.
- Zuckerman, M., Eysenck, S., & Eysenck, H. J. (1978). Sensation seeking in England and America: Cross-cultural, age, and sex comparisons. *Journal of Consulting and Clinical Psychology, 46*, 139–149.